Forest Insect & Disease Management

AN AERIAL SURVEY OF SPRUCE BUDWORM

DAMAGE ON THE CHEQUAMEGON NATIONAL FOREST,

WISCONSIN 1981

by

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INTRODUCTION

The most recent outbreak of spruce budworm Choristoneura fumiferana (Clemens), occurred on the Chequamegon National Forest in 1979 (Ford 1979). Prior to 1979 (1975-1978) spruce budworm was found at low population levels with light defoliation occurring on balsalm fir, Abies balsamea (L.) Mill., and white spruce, Picea glauca (Moench) Voss. During the 1980 aerial survey over 100,000 acres of predominately moderate to heavy spruce budworm defoliation were mapped.[1]/ Jack pine defoliation and/or mortality were also recorded during this survey.

OBJECTIVE

To determine the location, acreage, and severity of spruce budworm defoliation and other aerially detectable insect and/or disease damage on the Chequamegon National Forest in 1981.

METHODS

On June 30 and July 1 and 2, 1981, an aerial survey was made of the Chequamegon National Forest. A Cessna 182 was used as the survey aircraft, flown at an altitude of 1000 to 1500 ft. above ground level at an airspeed of 100 miles per hour. Observations were made between the hours of 0830 and 1530. The flight crew consisted of a pilot, navigator, and two observers. Flight lines were flown at 3 mile intervals in east-west directions. Current areas of defoliation and recent mortality were sketched on USDA Forest Service half-inch-to-the-mile maps. The following codes were used to designate severity of defoliation by spruce budworm.

DEFOLIATION

L-Light, 0-50% of crown showing reddish-brown discoloration.

M-Moderate, 51-100% of crown showing reddish-brown discoloration.

H-Heavy, 51-100% of crown showing reddish-brown and grey discoloration.

[1]/ Memorandum on file, to Supervisor Chequamegon National Forest, File 3420, September 8, 1980.

RESULTS

Most of the defoliation was in the light to moderate range occurring primarily on the Hayward, Glidden, and Park Falls Ranger Districts (Figure 1). Heavy defoliation was found on only 1,485 acres compared to the 24,572 acres heavily defoliated in 1980. Other damage mapped included jack pine defoliation and mortality (Table 2). Table 1 summarizes the spruce budworm aerial survey results and compares them to the 1980 aerial survey.

Table 1.--Acreage estimates of spruce budworm defoliation on the Chequamegon National Forest 1980 and 1981.

Spruce budworm defoliation	1980	1981	Net increase or decrease (percent)
Light	26,541	12,186	-54
Moderate	56,625	11,571	-80
Heavy	25,360	1,491	-94
Total	108,526	25,268	-77

Table 2.--Acreage estimates of jack pine budworm defoliation and jack pine mortality on the Chequamegon National Forest 1981.

	Federal acres	Private acres	Total acres
Jack pine budworm	205	102	307
Jack pine mortality	1,408	51	1,459

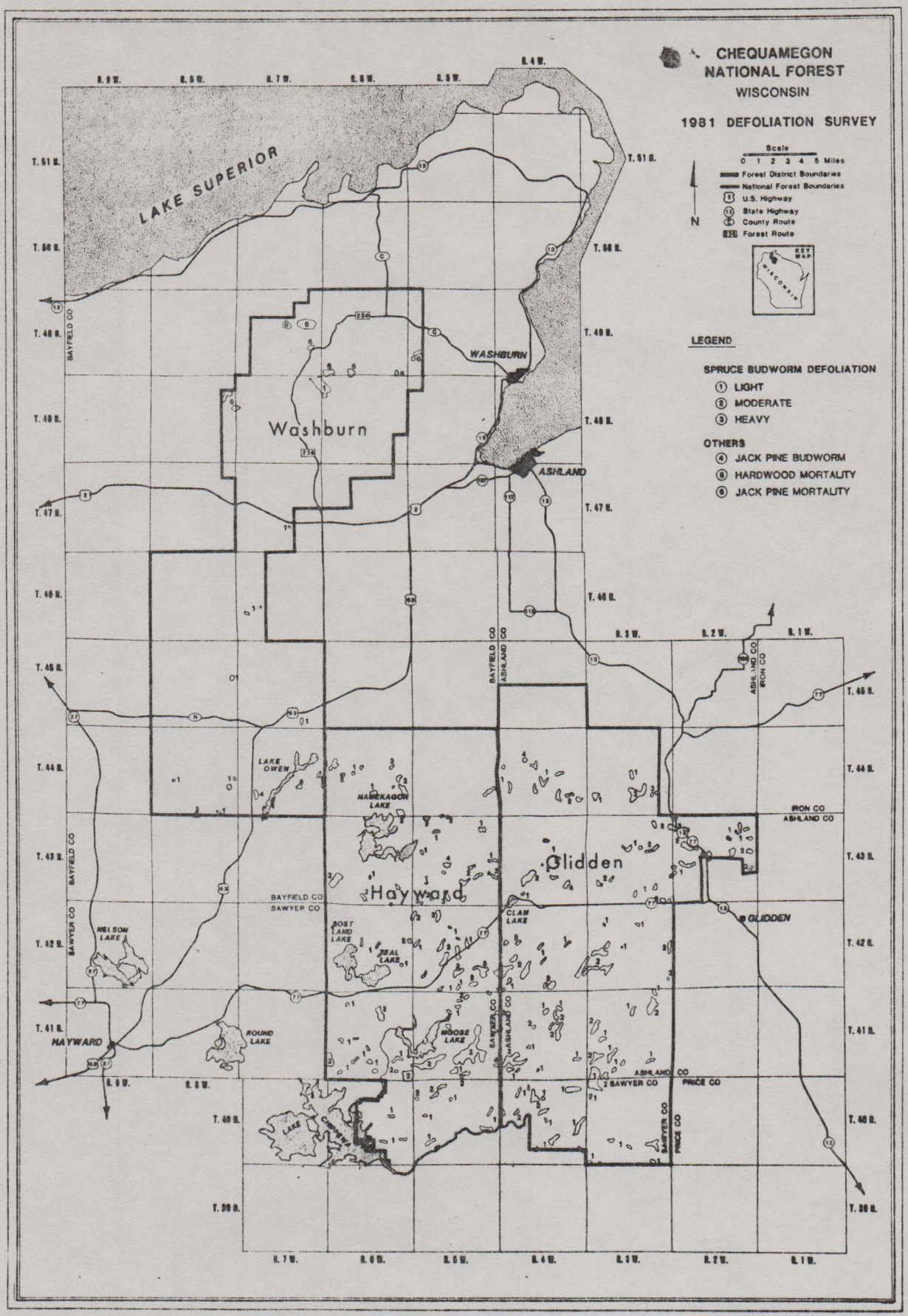
* Land ownership classifications are based on the National Forest map color code (green/Federal, white/private) for Table 2.

DISCUSSION AND RECOMMENDATIONS

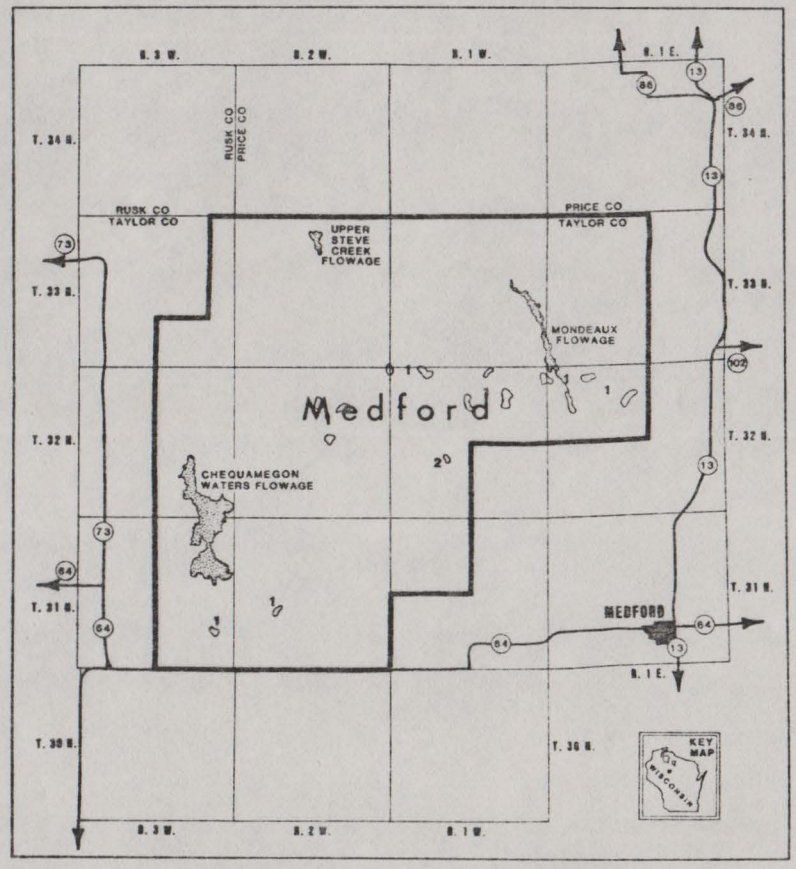
Significantly less spruce budworm defoliation occurred on the Forest in 1981 compared to the 1980 aerial survey. (Net decrease in defoliation was 77 percent in 1981). No ground checking was done by Forest Pest Management personnel, therefore, the cause of jack pine mortality has not been determined. Because of this apparent spruce budworm population collapse, and the jack pine defoliation and mortality detected, it is recommended that the Forest be aerially surveyed again in 1982. It is also recommended that areas of jack pine mortality should be groundchecked by National Forest personnel to help determine cause of the mortality and feasibility of salvage operations.

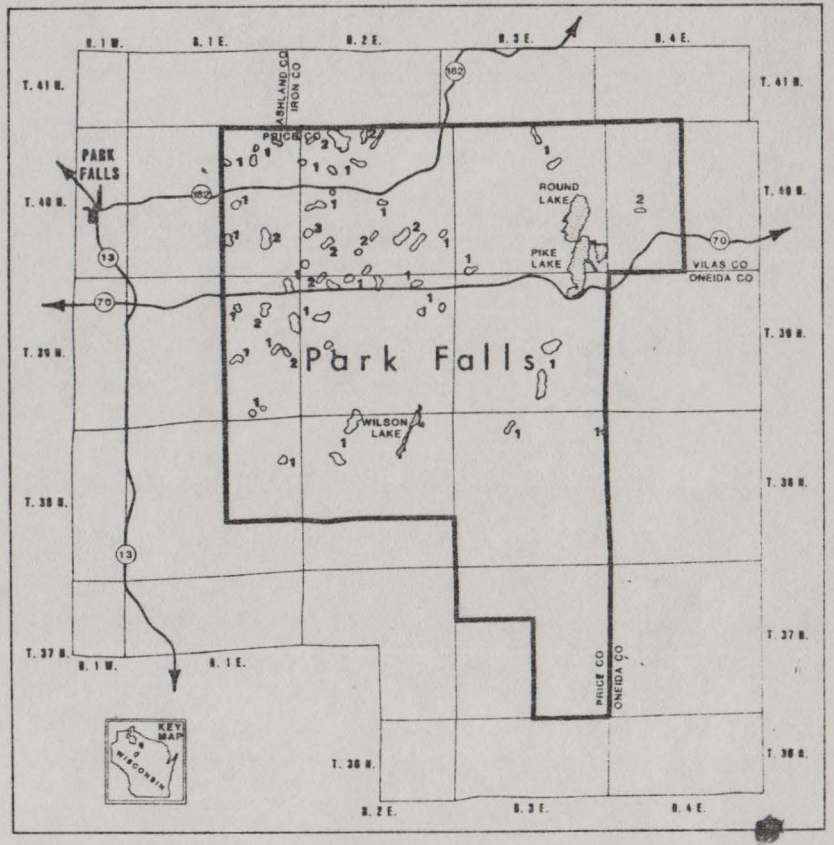
LITERATURE CITED

Ford, Robert P.
1979. "Aerial Survey of Spruce Budworm Defoliation on the Chequamegon National Forest. 1979" NA S&PF, St Paul Field Office Report NA-FB/P-3.


CHEQUAMEGON
NATIONAL FOREST
WISCONSIN
1981 DEFOLIATION SURVEY
Scale
0 1 2 3 4 5 Miles
Forest District Boundaries
National Forest Boundaries
U.S. Highway
State Highway
County Route
Forest Route
KEY MAP
WISCONSIN
N
LEGEND
SPRUCE BUDWORM DEFOLIATION
1 LIGHT
2 MODERATE
3 HEAVY
OTHERS
4 JACK PINE BUDWORM
5 HARDWOOD MORTALITY
6 JACK PINE MORTALITY
LAKE SUPERIOR
Washburn
WASHBURN
ASHLAND
Hayward
Glidden
GLIDDEN
HAYWARD
BAYFIELD CO
SAWYER CO
ASHLAND CO
IRON CO
PRICE CO
LAKE OWEN
NAMEKAGON LAKE
CLAM LAKE
LOST LAND LAKE
SEAL LAKE
NELSON LAKE
ROUND LAKE
MOOSE LAKE
T. 51 N.
T. 50 N.
T. 49 N.
T. 48 N.
T. 47 N.
T. 46 N.
T. 45 N.
T. 44 N.
T. 43 N.
T. 42 N.
T. 41 N.
T. 40 N.
T. 39 N.
R. 9 W.
R. 8 W.
R. 7 W.
R. 6 W.
R. 5 W.
R. 4 W.
R. 3 W.
R. 2 W.
R. 1 W.

CHEQUAMEGON NATIONAL FOREST
WISCONSIN





1981 DEFOLIATION SURVEY

LEGEND

1. LIGHT
2. MODERATE
3. HEAVY